

Amendments to the Claims:

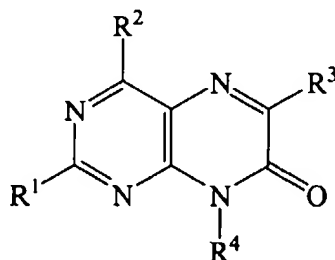
Please cancel claims 1-4 and 10-12 without prejudice or disclaimer.

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-17. (Canceled)

18. (Previously amended) An oligonucleotide comprising one or more nucleotide monomers, said monomers having the formula



wherein:

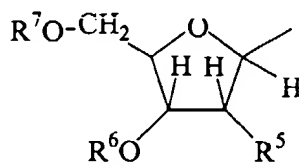
R¹ is a member selected from the group consisting of hydrogen and optionally substituted C₁-C₆-alkyl;

R² is a member selected from the group consisting of amino and mono- or di-substituted amino wherein the substituent is a protecting group;

R³ is optionally substituted C₁-C₆ alkyl;

R⁴ is L;

L is of the formula



wherein:

R^5 is a member selected from the group consisting of hydrogen and hydroxyl;

R^6 is a member selected from the group consisting of hydrogen, a phosphate, a phosphate covalently attached to a nucleotide, a phosphate covalently attached to a nucleoside; a hemisuccinate covalently bound to a solid support, a dicyclohexylcarbodiimide covalently bound to a solid support, and a hydroxyalkyl covalently bound to a solid support; and

R^7 is a member selected from the group consisting of hydrogen, a phosphate, a phosphate covalently attached to a nucleotide and a phosphate covalently attached to a nucleoside;

wherein at least one of R^6 and R^7 is a phosphate covalently attached to adenosine.

19. (Previously amended) An oligonucleotide in accordance with claim 18,
wherein:

R^1 is hydrogen;

R^2 is amino;

R^3 is methyl;

R^5 is hydrogen and hydroxyl;

R^6 is hydrogen; and

R^7 is a phosphate covalently attached to adenosine.

20. (Original) An oligonucleotide in accordance with claim 19, wherein:
 R^5 is hydrogen.

21. (Original) An oligonucleotide in accordance with claim 19 wherein:
 R^5 is hydroxyl.

22. (Previously amended) An oligonucleotide in accordance with claim 18,
wherein:

R^1 is optionally substituted C_1 - C_6 -alkyl;

R^2 is amino;

R^3 is methyl;

R⁵ is hydrogen and hydroxyl;
R⁶ is hydrogen; and
R⁷ is a phosphate covalently attached to adenosine.

23. (Previously amended) An oligonucleotide in accordance with claim 22,
wherein

R¹ is methyl; and
R⁵ is hydrogen.

24. (Previously amended) An oligonucleotide in accordance with claim 22,
wherein

R¹ is methyl; and
R⁵ is hydroxyl.

25. (Original) An oligonucleotide in accordance with claim 18, wherein said
nucleotide monomers are at the 3' end of said oligonucleotide.

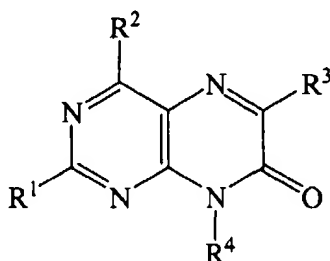
26. (Original) An oligonucleotide in accordance with claim 18, wherein said
nucleotide monomers are at the 5' end of said oligonucleotide.

27. (Original) An oligonucleotide in accordance with claim 18, wherein said
nucleotide monomers are surrounded by 1 to 10 pyrimidine monomers.

28. (Previously amended) An oligonucleotide in accordance with claim 18,
wherein said oligonucleotide is a member selected from the group consisting of SEQ ID NO:1,
SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ
ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, SEQ
ID NO:14, SEQ ID NO:15, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19,
SEQ ID NO:20, SEQ ID NO:21 and SEQ ID NO:22.

29. (Previously amended) A method of detecting the presence, absence, or quantity of a target nucleic acid, said method comprising the steps of:

a) contacting said target nucleic acid with a nucleic acid probe wherein said nucleic acid probe comprises compound of the formula:



wherein:

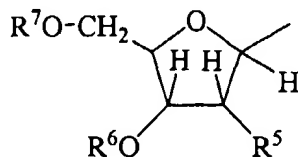
R¹ is a member selected from the group consisting of hydrogen and optionally substituted C₁-C₆-alkyl;

R² is a member selected from the group consisting of amino and mono- or di-substituted amino wherein the substituent is a protecting group;

R³ is optionally substituted C₁-C₆ alkyl;

R⁴ is L;

L is of the formula



wherein:

R⁵ is a member selected from the group consisting of hydrogen and hydroxyl;

R⁶ is a member selected from the group consisting of hydrogen, phosphoramidite, an H-phosphonate, a methyl phosphonate, a phosphorothioate, a phosphotriester, a hemisuccinate, a hemisuccinate covalently bound to a solid support, a dicyclohexylcarbodiimide, and a dicyclohexylcarbodiimide covalently bound to a solid support; and

R^7 is a member selected from the group consisting of a phosphate covalently attached to a nucleotide and a phosphate covalently attached to a nucleoside;

wherein, at least one of R^6 and R^7 is a phosphate covalently attached to adenosine; located in said probe such that, when said probe hybridizes to said target nucleic acid said compound is in a loop that does not participate in complementary base pairing with a nucleotide of said target nucleic acid; and

b) detecting the fluorescence produced by said fluorescent nucleotide when said probe forms a hybrid duplex with said target nucleic acid.

30. (Original) A method of claim 29, wherein said loop ranges in length from about 1 to about 100 nucleotides when said probe hybridizes to said target nucleic acid.

31. (Original) A method of claim 29, wherein said loop is an insertion in said nucleic acid probe which is otherwise complementary to said target nucleic acid or to a contiguous subsequence of said target nucleic acid.

32. (Original) A method of claim 31, wherein said insertion is three nucleotides in length and comprises two nucleotides each adjacent to said compound.

33. (Original) A method of claim 32, wherein at least one nucleotide adjacent to said compound is a purine.

34. (Original) A method of claim 33, wherein at least one nucleotide adjacent to said compound is an adenosine.

35. (Original) A method of claim 32, wherein at least one nucleotide adjacent to said compound is a pyrimidine.

36. (Original) A method of claim 35, wherein at least one nucleotide adjacent to said compound is a cytosine.

37. (Original) A method of claim 34, wherein said compound is bordered by at least two adjacent purines in both the 5' and 3' direction.

38. (Original) A method of claim 37, wherein said adjacent purines are adenosine.

39. (Original) A method of claim 31, wherein said insertion is said compound.

40. (Original) A method of claim 31, wherein said insertion is self-complementary and forms a hairpin wherein said compound is present in the loop of said hairpin and does not participate in complementary base pairing.

41. (Original) A method of claim 29, wherein the nucleotides comprising said loop are selected such that they are not complementary to the corresponding nucleotides of the target nucleic acid when said probe is hybridized to said target nucleic acid and wherein said probe is complementary to at least two non-contiguous subsequences of said target nucleic acid.

42. (Original) A method of claim 29, wherein said fluorescent nucleotide is present in a terminal subsequence of said nucleic acid probe wherein said terminal subsequence does not hybridize to said target nucleic acid when the remainder of said nucleic acid probe hybridizes to said target nucleic acid.

43. (Original) A method of claim 42, wherein said terminal subsequence forms a terminal hairpin by hybridization with a second subsequence of said probe such that said fluorescent nucleotide is present in a loop of said hairpin and does not participate in complementary base pairing.

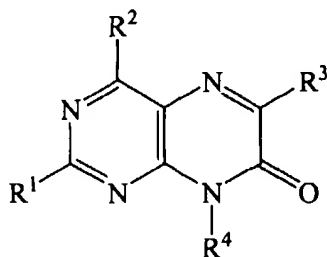
44. (Original) A method of claim 29, wherein said detecting comprises detecting an increase in fluorescence of said fluorescent nucleotide when said probe forms a hybrid duplex with said target nucleic acid.

45. (Canceled)

46. (Previously added) An oligonucleotide in accordance with claim 18 wherein R^6 and R^7 are both adenosine.

47. (Previously added) An oligonucleotide in accordance with claim 46 wherein an adenosine is next to R^6 and an adenosine is next to R^7 .

48. (Previously represented - formerly dependent claim 45) A kit for the detection of nucleic acid-nucleic acid interactions comprising instructions for use, and a container, said container containing a compound of the formula:



wherein:

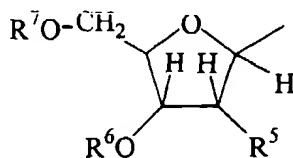
R^1 is a member selected from the group consisting of hydrogen and optionally substituted C_1 - C_6 -alkyl;

R^2 is a member selected from the group consisting of amino and mono- or di-substituted amino wherein the substituent is a protecting group;

R^3 is optionally substituted C_1 - C_6 alkyl;

R^4 is L;

L is of the formula



wherein:

Appl. No. 09/786,666
Amdt. dated September 11, 2003
Amendment under 37 CFR 1.116 Expedited Procedure
Examining Group

PATENT

R^5 is hydroxyl;

R^6 is a member selected from the group consisting of hydrogen, phosphoramidite, an H-phosphonate, a methyl phosphonate, a phosphorothioate, a phosphotriester, a hemisuccinate, a hemisuccinate covalently bound to a solid support, a dicyclohexylcarbodiimide, and a dicyclohexylcarbodiimide covalently bound to a solid support, a hydroxyalkyl, and a hydroxyalkyl covalently bound to a solid support; and

R^7 is a member selected from the group consisting of hydrogen, a phosphate, a triphosphate, and a protecting group.